

REMARKS/ARGUMENTS

In the present amendment, claims 16-21 have been amended, claims 22-34 have been cancelled and new claims 38-40 have been added. Support for the amendments can be found throughout the specification and claims as originally filed. For example, support for the amendment of claims 16-21 can be found at least at page 2, lines 34-35, and at page 6, lines 20-34. Support for new claims 38-40 can be found at least at page 4, lines 1-17; at page 5, line 37 to page 6, line 7; at page 8, lines 4-9; and at page 10, lines 19 to 25. *No new matter has been added.*

Accordingly, upon entry of the present amendment, claims 16-21 and 38-40 will be pending. Any amendments to and/or cancellation of the claims should in no way be construed as acquiescence to any of the rejections and was done solely to expedite the prosecution of the application. Applicants reserve the right to pursue the claims as originally filed or as previously pending in this or a separate application(s).

Claim Objections

Claims 34-37 were objected to under 37 CFR §1.75(c), as being of improper dependent form. Claims 34-37 have been cancelled, thus rendering this objection moot.

Claim Rejections – 35 USC §112, second paragraph

All of the pending claims were rejected as being indefinite on the ground that “the specification does not teach how to make and use the claimed channel because a channel is composed of subunits and it is not clear how a channel has the SEQ ID NO: 2”. Claims 34-37 have been cancelled. Claim 16 has been amended as suggested by the Examiner to recite “An isolated proton-gated cation channel comprising a subunit which comprises the amino acid sequence of SEQ ID NO:2,” in order to more clearly set forth the claimed subject matter. Similarly, dependent claims 17-21 have been amended to specify that the claimed channel is either homopolymeric or heteropolymeric. In view of these amendments, reconsideration and withdrawal of this rejection is respectfully requested.

Claim Rejections – 35 USC §112, first paragraph

Claims 34-37 were rejected on the ground that the subgeneric limitations set forth in these claims are not disclosed in the specification. These claims were further rejected on the ground that the specification does not adequately disclose the claimed genus which includes variants without a functional limitation.

Solely in the interest of expediting prosecution, claims 34-37 have been cancelled, thus rendering these rejections moot. Further, new claims 38-40 are each directed to an isolated proton-gated channel with functional limitations as suggested by the Examiner. Specifically, claim 38 is directed to a channel comprising a subunit that is at least 85% identical to the species disclosed in SEQ ID NO:2, wherein the channel displays a biphasic current when activated by an extracellular proton concentration below physiological pH and wherein the slow component of the biphasic current is amiloride-sensitive. Similarly, claims 38 and 39 are directed to channels in which the subunit contains minor variations but retains the specific functional limitations of the subunit species disclosed in SEQ ID NO:2.

Claims 16-21 were rejected on the following ground: while the description is enabling for an isolated channel comprising the subunit with an amino acid sequence of SEQ ID NO:2, it does not reasonably provide enablement for the claimed channel because the channel is composed of subunits and it is not clear how a channel has the sequence of SEQ ID NO:2.

As set forth above, claim 16 and dependent claims 17-21 have been amended to specify that the claimed proton-gated channel comprises a subunit which comprises the amino acid sequence of SEQ ID NO:2. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

Claims 34-37 were also rejected on the ground that the specification is not enabling for the claimed genus of variants because “sequence similarity alone without function is insufficient to support claims to polypeptides other than the disclosed sequence where the genus includes inactive proteins.”

As set forth above, claims 34-37 have been cancelled, and new claims 38-40 which are directed to a channel a genus of channels with specific functional limitations. Applicants respectfully submit that the functional characterization of the species and assays disclosed in the instant specification provide sufficient guidance to allow one skilled in the art to test any channel within the scope of the claimed invention using only routine experimentation. Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

A petition for one month extension of time accompanies this response so that the response will be deemed to have been timely filed. If any other extension of time is required in this or any subsequent response, please consider this to be a petition for the appropriate extension and a request to charge the petition fee to the Deposit Account No. 17-0055. No other fee is believed to be due in connection with this response. However, if any fee is due in this or any subsequent response, please charge the fee to the same Deposit Account No. 17-0055.

Respectfully submitted,
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